

Comprehension of the hand baggage retrieval pictorial on the safety card



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Background

- **Accident reports have highlighted passengers retrieving or attempting to retrieve hand baggage during an emergency evacuation.**
- **Retrieval or attempted retrieval has the potential to negatively impact on the evacuation.**
- **Burdett & Grant (2010) highlighted that some passengers are generally unaware about non-retrieval of baggage.**

Background

- Regulations require the information to be conveyed via the safety card.
- Typically via a *do not retrieve hand baggage* pictorial which shows an item of baggage with a red cross through it.
- Previous studies have shown a lack of comprehension of other pictorials.



Embedding

- Literature suggests that for warning symbols, comprehension can be enhanced by embedding the warning within the set of procedures.
- Placing the pictorial within its related context. In this application, the hand baggage pictorial within the evacuation procedures image.
- An embedded example is a passenger moving towards an exit holding a bag, with a red cross through the bag.

- A selection of 46 safety cards were reviewed to determine if embedment was being used for the hand baggage pictorial.
- *37 cards (80.4%) did not embed.*
- 4 cards (8.6%) used embedment.
- 2 cards (4.3%) somewhere in between.
- 3 cards (6.5%) did not use pictorial.

Aim of research



- To assess the comprehensibility of the *do not retrieve hand baggage* pictorial.
- To investigate the effect of embedding the pictorial within the evacuation procedures image on the safety card.

Data collection

- **Comprehension test - used British Standards guidance.**
- **Needed an image typically found on an airline card.**
- **Review of 46 airline safety cards led to development of test image:**
 - **Layout of images showing emergency exits**
 - **Additional pictorials usually placed with hand baggage pictorial – location and number.**

Data collection



- **Comprehension test via a self completion booklet**
(The test booklet also contained images of other safety related procedures to minimise participants guessing the purpose of the study).
- **Standardised question. Qualitative data were obtained.**
- **Independent variable: level of embedment of the *do not retrieve hand baggage* pictorial.**

Test conditions

- The embedment level of *do not retrieve hand baggage* pictorial was tested in two conditions:
 - *Pictorial not embedded in evacuation procedures image (test condition 1)*
 - *Pictorial embedded in evacuation procedures image (test condition 2)*

Test conditions

1. *Pictorial not embedded:*

an item of baggage with a red cross through it located on the same page as the pictorial showing the evacuation procedures (use of emergency exits).

2. *Pictorial embedded:*

within the image of the evacuation procedures (use of emergency exits) a passenger at the exit holding an item of baggage with a red cross through the bag.

Test image

- **Either the non-embedded or embedded hand baggage retrieval pictorial was presented alongside other images typically found on this section of a safety card.**
- **The other images were:**
 - **Pictorials showing land evacuation, no smoking and the location of the emergency exits**
 - **Pictograms showing the use of a floor level exit and a non-floor level exit.**

Embedment level	
<i>Pictorial not embedded in evacuation procedures image</i>	<i>Pictorial embedded in evacuation procedures image</i>
30 participants	30 participants

Participants were asked to study the image and were then visually directed to the hand baggage pictorial, and asked to explain what they thought the image meant.

Data analysis

- Responses were compared against comprehension criteria established by SMEs.
- Responses were allocated against categories based on level of comprehension (three coders).
- Inter-coder reliability check undertaken on all responses.

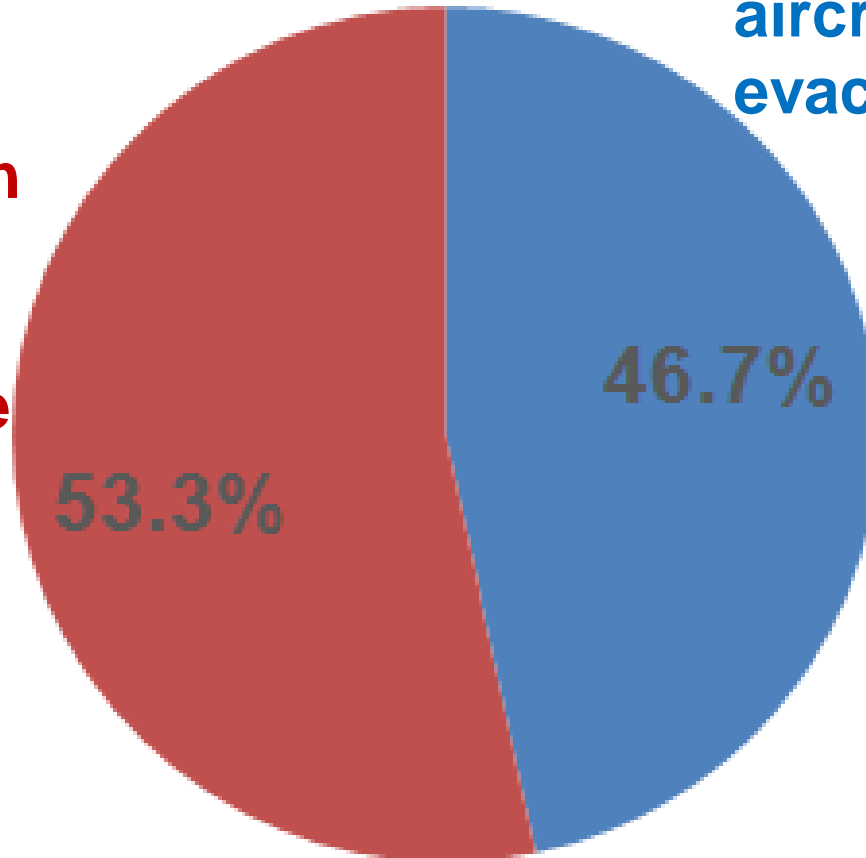
Results: sample

- 60 participants - 70% male and 30% female.
- Mean age - 32.9 years (sd 13.6 years).
- Flown in last 12 months:
 - No – 16.6%
 - 1-3 return trips – 51.6%
 - 4-7 return trips – 20%
 - 8+ return trips – 11.7%.

Comprehension – non-embedded

Leave/do not take hand
baggage on board the
aircraft in case of
evacuation

No luggage on
board and/or
in the space
defined by the
sign



■ Correct
■ Incorrect

Comprehension – non-embedded

“Leave the baggage
in the plane when
evacuating”

“In case of an
emergency landing
leave your luggage
onboard when
evacuation”

“Do not leave
luggage in aisles”

“No baggage
inside the plane”

“No carry on
luggage inside”

“No storage of
luggage at this area”

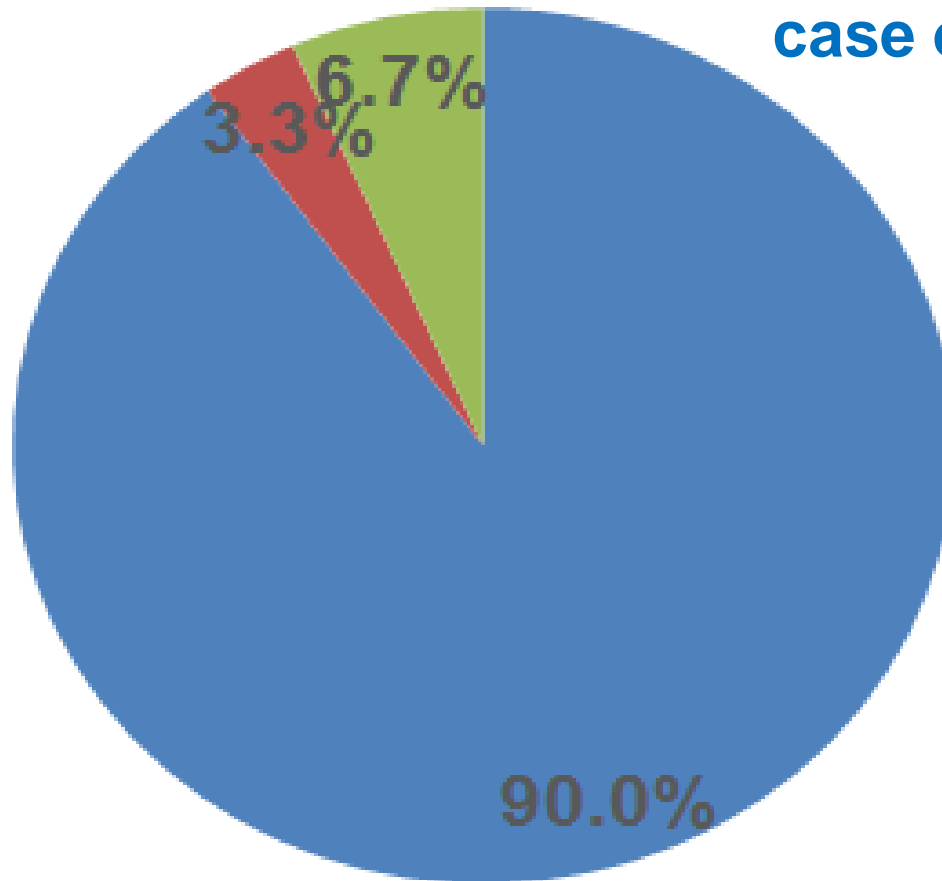
“Do not attempt to
remove baggage
when evacuating an
aircraft (leave them
in the lockers”

“Do not collect baggage
when evacuating”

Comprehension – embedded

Do not take/collect /bring hand baggage in case of evacuation

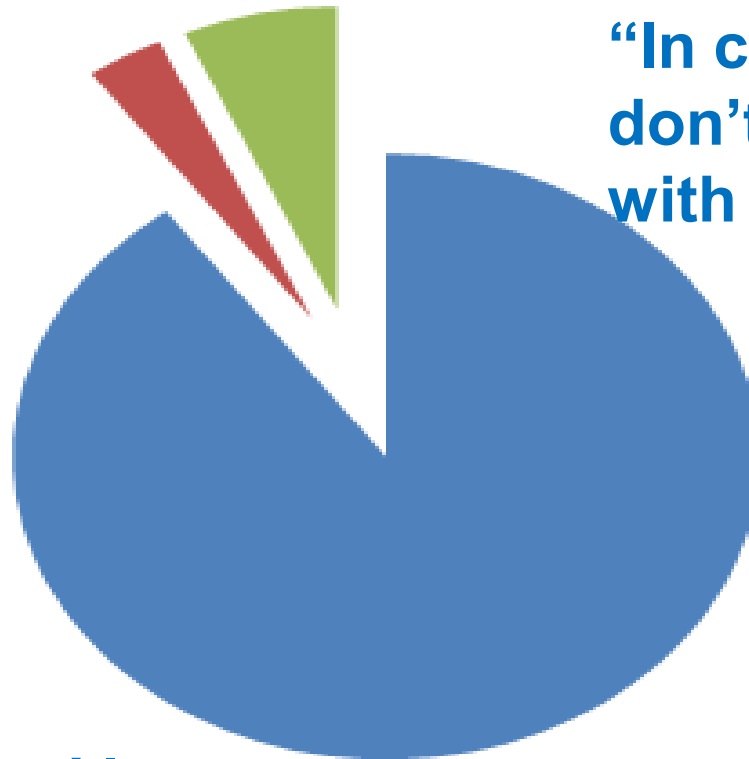
Do not know



- Correct
- Likely correct
- Incorrect

Comprehension – embedded

“Do not know”



“In case of emergency,
don’t take your hand bag
with you”

“Do not take any
baggage in
evacuation”

“No carrying personal
belongings when
evacuating the plane”

“No hand luggage
when exiting in an
emergency, leave
it behind”

“...how to act
in emergency
situation....
describes that
extra items in
an emergency
are not
allowed”

Comprehension score

- Data categorised into correct, incorrect and likely.
- For each category:
$$\frac{\text{Frequency}}{\text{Total responses}} \times 100 \times \text{weighting (dependent on response category)}.$$
- Weightings: correct (1.00), incorrect (0.00) and likely (0.75).
- Sum = comprehension score expressed as %.

- **Non-embedded booklet – comprehension score =
46.7%**
- **Embedded booklet – comprehension score =
92.5%**

Comprehension - levels of embedment

	Not embedded	Embedded
Gave correct answer	14 (46.7%)	27 (93.1%)
Did not give correct answer	16 (53.3%)	2 (6.9%)
TOTAL	30	29

Comprehension - levels of embedment

- A chi-square test of association between comprehension and level of embedment
 - Significant association $\chi^2 = 12.88$, df 1 $p < .05$.
- Embedment of pictorial significantly associated with a correct response.

Conclusions



- Lack of comprehension of the pictorial typically used to inform passengers not to retrieve hand baggage in an evacuation.
- When shown the non-embedded pictorial, just over half the sample did not correctly comprehend the intended meaning.
- Embedding of the *do not retrieve hand baggage* pictorial was not found on most of the cards reviewed.

Conclusions

- Embedding the pictorial within the evacuation instructions improved comprehension of the pictorial, with over 90% of participants correctly providing the intended meaning.
- Embedment was significantly associated with correct answers.
- Passenger comprehension of the *do not retrieve hand baggage* pictorial needs to be enhanced.

Conclusions



- **Data from more participants are required prior to recommendations, but embedment may be a possible means of enhancing comprehension of this pictorial.**
- **Also need to look at the impact (positive or negative) of embedment on comprehension of other information within the evacuation instructions.**
- **Embedment could also be investigated with other appropriate pictorials.**

Thank you!

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